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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,511	03/26/2004	Tomoaki Nakashima	12699/7	8589

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EXAMINER	
MERCADO, JULIAN A	
ART UNIT	PAPER NUMBER
1745	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/809,511	NAKASHIMA ET AL.	
	Examiner	Art Unit	
	Julian Mercado	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *three* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19,22 and 23* is/are rejected.

7)☒ Claim(s) *20 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2004-03-26*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Skala et al. (U.S. Pat. 6,911,277 B2).

For claims 1 and 15, Skala et al. teaches a fuel cell system comprising a fuel cell system comprising a switching member/regulation module [40, 42] that opens and closes an outlet an oxidizing gas conduit and a fuel gas conduit. See col. 3 lines 17-42. An actuation module actuates the switching member/regulation module. See col. 3 line 54 et seq.

For claims 2-4, the fuel cell stack is a laminate of a number of fuel cells, arranged in blocks [70a-70f] and each having manifolds [36, 38]. See Figure 1, col. 3 lines 21-23 and col. 4 lines 21-36.

For claims 5-9, the switching member is specifically disclosed as a "rotary sector valve" having slits [A-D] on its circumferential face thereof. See col. 3 line 26 et seq. As to *positioning* of a remaining area of the switching member other than the slit to face the outlet of the gas conduit in a manner that narrows an opening area of the outlet of the gas conduit to or toward zero and *positioning* of the slit of the switching member to face the outlet of the at least one gas

conduit such that it widens the opening area of the outlet of the gas conduit, these limitations have not been given patentable weight as the claimed "positioning..." steps are more properly drawn to a process-of-using limitation which fails to further limit or give patentable structural scope to the "fuel cell system..." claim. Notwithstanding, in Skala et al. the switching member may be positioned to allow "the stack flowpaths to be reconfigured dependent on reactant gas throughput such that the pressure drop across the fuel cell stack remains reasonable while providing sufficient velocities and reactant concentrations at each cell." See col. 4 lines 3-8. See also Figures 2-5 which show the myriad of positions achievable, and Figure 7B which illustrates the "different partition arrangements which direct reactant gas flow along different paths." (col. 3 lines 29-32)

For claims 10-14, an actuation control module, such as a central processing unit (CPU) [58], controls the actuation modules. See col. 3 line 54 et seq. A storage module, such as "volumetric flow sensor" [60], stores an output behavior of the fuel cell, i.e. its volumetric flow. Storing of the output behavior "under conditions of flocculation of water droplets..." has not been given patentable weight, as this limitation appears to be drawn to a statement of intended use; notwithstanding, one of the objectives achieved in Skala et al. is changing the flowpath configuration with the stack throughput which keeps gas velocities "sufficiently high to keep the channels clear of water." See col. 4 lines 11-14. Additionally, for the reasons set forth in the foregoing paragraph, the instant "to narrow an opening area..." and "generating pulsation in the gas conduit" conditional to an output or measurement in the fuel cell have not been given patentable weight, as these process-of-using steps fail to further limit or give patentable structural scope to the "fuel cell system..." claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skala et al. (U.S. Pat. 6,911,277 B2) in view of Kawazu (JP 07-235324).

The teachings of Skala et al. are discussed above.

For claims 15-19, Skala et al. does not explicitly teach a water level determination module to determine the level of water in the fuel cell blocks. However, Kawazu teaches detecting the wet condition of electrodes, such as its electric resistance, and purging the fuel cell stack with oxygen gas and thereby exhausting water outside. See par. [0018] and [0039] of the machine translation. The skilled artisan would find obvious to modify Skala et al. by employing a water level determination module. The motivation for such a modification would be to enhance water removal at the surface of the cathode.

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skala et al. (U.S. Pat. 6,911,277 B2) in view of "Just the Basics: Fuel Cells".

The teachings of Skala et al. are discussed above.

Skala et al. does not explicitly teach its fuel cell in a vehicle. However, the article is relied upon to teach or at least suggest to the skilled artisan a vehicle using the claimed fuel cell system, motivated by reasons such as its energy efficiency and low/zero emissions, *inter alia*.

Allowable Subject Matter

Claims 20 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach or suggest the instant invention regarding a block position recognition module that recognizes a positional relation of multiple cell blocks such that the actuation control module (which itself regulates a regulation module such as a switching member) increases a preset reference area of a gas manifold for a fuel cell block recognized to be downstream of the block position module. As understood by the examiner, this feature of the claimed invention allows for the back-pressure control valves in the most downward fuel cell block, when set to the more open positions than the middle positions, to have an increase in the flow of the air and hydrogen. (specification on page 46) The examiner further notes that the disclosed "horizontal attitude" for a vehicle is used in a similar context as in a spacecraft's position relative to a frame of reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER

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